HOUSE BILL 1284 – WETLAND AND WATERWAYS PROGRAM – STREAM RESTORATION PROJECTS

COMMITTEE – Environment and Transportation

Testimony on H.B. 1284

Position – Support

Hearing Date – March 6, 2024 (submitted on March 4, 2024)

Dear Members of the Environment and Transportation Committee:

I am Robert Dover, a resident at 6354 Tamar Drive, in Columbia, Howard County, Maryland. I am writing to request that you fill a favorable report for House Bill 1284.

I am a surface water hydrologist and environmental planner, with more than 30 years of environmental consulting experience. I have managed the public engagement processes for federal NEPA projects for about 20 years, and have also experienced them directly as a landowner adjacent to a proposed stream restoration project.

There was substantial discussion, during last week's testimony on H.B. 1165, regarding the conclusions of the CESR report. Multiple legislators and representatives of the "stream restoration" industry bemoaned the fact that, after more than 20 years of doing stream restoration projects, the Chesapeake Bay has not exhibited any positive improvements. Unfortunately, the conclusion drawn by most of these commenters was that these negative results could be improved upon in the future by doing more and larger projects, and approving them faster.

I strongly disagree with that conclusion. Based on my 30+ year career as a surface water hydrologist, with a special focus on the effect of tree removals on hydrology, it is obvious to me why the CESR report's conclusions were so negative. The reasons are:

1) The projects ignore the fact that tree removal exacerbates stormwater runoff damage in our watersheds;
2) The failure of the program to require project-specific monitoring to determine the success or failure of each individual project makes it impossible to identify the factors that lead to success or failure; and
3) The failure of the "stream restoration" practitioners and agencies to ensure that adjacent property owners and potentially affected residents are notified, and are given honest and factual information, regarding the location and extent of tree removal, allows the stream restoration practitioners to maximize the destruction of the existing, mature forests that are essential to keeping our watersheds healthy.

Background

The negative, adverse impacts of "stream restoration" projects are definite and certain, while the positive benefits are speculative and uncertain. Meanwhile, the more destructive a project is, the more money that the "stream restoration" contractor makes.

Those two statements, combined, should make any influence exerted on this legislative process by the "stream restoration" industry questionable.

Whether or not they are ultimately successful in achieving any long-term restoration goals, so called "stream restoration" projects are enormously destructive. They generally rely on massive

deforestation in order to re-connect floodplains, and to replace upland forests with riparian communities. This eliminates the critical evapotranspiration and other hydrologic functions of mature forests, displaces or kills existing wildlife, increases the potential for downstream flooding on adjacent properties, and impacts viewscapes from residences, reducing their property values. The disturbance of the soil exposes deeper soils to oxygen and pH changes, which can mobilize otherwise insoluble minerals, such as iron. The projects also bring in foreign materials such as rocks, soil, gravel, and organic material from other locations, upsetting the established geochemical equilibrium, and again resulting in mobilizing otherwise stable materials.

When a project is approved, the deforestation, displacement of existing wildlife, increase in flooding potential, and visual impacts to adjacent property owners WILL occur. What is more concerning is that these destructive impacts are not only certain, but they are immediate and irreversible. The devastation occurs within a few short weeks and, once done, cannot be undone. I have found multiple examples of communities, including my own, where the first “stream restoration” project was allowed to proceed because the community was not properly informed about the extent and duration of destruction that was going to occur, but the proposed second project was fought aggressively, once the community saw how these projects really work. This pattern can only be stopped by a more proactive community engagement program, including comprehensive public notification and multiple comment opportunities, beginning at the conceptual stage, and including the ability to review and comment on final design plans before a project is approved.

The negative impacts are also long-term, affecting the project area for years or decades. The public notices that I received from MDE for one of these projects not only failed to disclose the extent of tree removal adjacent to my property, but also claimed that the impacts would be “temporary”. In a recent Environmental Impact Statement for another project in Maryland, the U.S. Army Corps of Engineers (USACE) defined the duration of impacts for a project involving vegetation removal as “long-term” or “permanent”. This is a standard assumption under the National Environmental Policy Act (NEPA). Also, even non-professionals understand that it will take decades to restore a mature forest canopy and ecology once mature trees are removed from an area. Claims that the adverse impacts of these project are “temporary” can only be a deliberate attempt to misinform the public in order to minimize public scrutiny.

In contrast, the published scientific literature regarding the supposed benefits of these projects on streambank stability, improvement of water quality, and improvement of ecological function is overwhelmingly negative. I have compiled a bibliography of more than 30 recent (2008 to 2023) articles and studies, published in academic journals and funded by Chesapeake Bay protection organizations such as Chesapeake Bay Trust, which have reviewed the results from completed projects, and found them to have had few or no beneficial effects.

Similarly, I have completed an intensive study of the post-construction documentation associated with completed “stream restoration” projects in Howard County, and the results are either inconclusive, or negative. The Department of Public Works (DPW) is required to report results from three watersheds in which “stream restoration” projects have occurred. From the 2022 annual report, with my emphasis added, quotes for Wilde Lake: "Overall, the stream system in the Wilde Lake watershed . . . has NOT demonstrated measured improvement in either habitat quality or ecological stream health." "Total Suspended Solids (TSS) levels in stormflow samples CONTINUE TO BE ELEVATED." "Overall, implementation of projects in the watershed DO NOT appear to have significantly improved the physical habitat." Quotes from Red Hill Branch: "Post-restoration monitoring results indicate a subwatershed in an overall degraded condition, with LITTLE CHANGE from the first two years of pre-restoration monitoring" "The biological community and habitat . . . remain in a degraded condition and have NOT shown

any significant improvement after restoration." Quotes from Dorsey Hall monitoring: "The physical habitat results show that both sites are severely impacted . . . with NO EVIDENCE yet of ecological uplift after restoration."

I have seen similar observations from the Longfellow “stream restoration” project developed by the State Highway Administration on land owned by the Columbia Association. The Year Two and Year Three Monitoring Reports show that post-construction sampling of water quality and surveys of ecological function are not even required, yet the contractor is allowed to make claims, in their report, that water quality and ecological function have been improved. The project, conducted in 2020, failed to meet its required 75% reforestation standard for the DNR, achieving only 36% after three years. The project was required to re-plant 700 new trees in October, 2023 – yet the report still claimed that the project was “self-sustaining”. Despite the lack of any actual monitoring data, and the failure to meet the reforestation goal, the responsible stream restoration contractor still had the temerity to recommend, to the U.S. Army Corps of Engineers, that they be excused from their required fifth year of monitoring.

I have also reviewed the “Prospectus”, or applications to MDE and USACE for a permit under the Nationwide Permit 27 (NWP-27), including those for the proposed Elkhorn Branch project, and the proposed Plumtree Branch project. My review of these documents was alarming. Both of these documents presented the project in the following manner:

- Exaggerated the need for the project, including showing multiple photos of nearby infrastructure without any documentation or statement suggesting that the infrastructure referred to was in any way threatened by the stream.
- Exaggerated the benefits of the project, especially making exaggerated claims of anticipated water quality improvement and ecological uplift. Both documents were written and submitted in the 2019-2021 timeframe, and both cited published, scientific literature in order to support their claims of benefits. In both cases, the cited documents did not actually make the statements that the Prospectus claimed that they made. Also, both documents failed to cite any recent published, scientific literature. The most recent study cited in the Plumtree document was dated 2000, or more than 20 years old. The most recent study cited in the Elkhorn document was dated 2008. Both documents failed to include citations for any of the dozens of scientific, academic articles and post-construction studies published between 2010 and 2022.
- Ignored the adverse impacts of the project. Where “stream restoration” companies have mentioned adverse impacts in their correspondence, it is focused entirely on adverse impacts of the construction activities, without a word regarding the long-term impacts to hydrology, ecology, flooding, and adjacent property values.

It should also be noted that the profits generated by these companies are DIRECTLY proportional to the destruction they cause. The larger and more aggressive the project, the greater the level of effort, and therefore the greater the cost to the agencies paying for the projects. These companies actually have a financial incentive to inflict the maximum amount of destruction on an area, regardless of the adverse impacts or whether the area is residential.

At the same time, the compensation paid to these companies is completely independent of the results. For the Elkhorn Branch project, the developer proposed that they be allowed to sell 70% of their mitigation credits upon completion of construction, with no demonstration that the construction achieved any positive results. There is no requirement to conduct pre- or post-construction water quality, streambank migration, or ecological monitoring to establish whether these objectives have been achieved. The only required monitoring is visual inspection of structures, and counting of trees. At the Longfellow project in Columbia, the contractor failed on

both accounts. Three years after completion of construction (and having been paid more than $2 million for it), the reforestation success rate had dropped to 36%, the contractor noted multiple instances of structures at risk of failure, and they still opened a conversation with USACE about being excused from their required fifth year of monitoring.

Based on these observations, it is my opinion that the "stream restoration" industry, in general, is not based on a solid, scientific footing. Instead, it is entirely based on greenwashing, making exaggerated claims of benefits to persuade well-meaning members of the community that these projects are environmentally-friendly and science-based, when nothing could be further from the truth. Any objective consideration of these projects must present an accurate and up-to-date assessment of both the expected benefits AND the long-term, adverse impacts, and must honestly report the likelihood of each occurring. That information is currently completely missing from the documentation submitted by these companies.

I hope you agree that, to be successful, the practice of stream restoration in Maryland must:

- Be based on the most up-to-date, published science available;
- Have its results, positive or negative, documented through comprehensive pre- and post-construction field data collection and monitoring;
- Closely coordinate with the surrounding community and potentially affected property owners at ALL stages of the process;
- Consider the realistic probability of success, rather than just assume that placement of engineered structures will automatically result in improved water quality and uplifted ecology; and
- Consider the adverse impacts, including the duration of those impacts to residents, the challenges associated with revegetation efforts, and the certainty that long-term adverse impacts will occur.

Without addressing these issues, the "stream restoration" companies will continue to present their unrealistic, unsupported opinion of the benefits of these projects, and will continue to fail to properly notify the surrounding residents of the actual extent and duration of destruction that is about to be inflicted on their communities.

Need to Minimize Tree Removals

Most of the adverse effects of tree removals on ecology and adjacent residential property values are well-documented, and need no further elaboration. However, there is a substantial adverse effect that is less well-known, and which cuts directly to the core of the success or failure of "stream restoration" projects. This is the effect of tree removal on surface water hydrology and runoff volumes.

I have had substantial professional experience in surface water hydrology, including multiple projects in which I analyzed the hydrologic effects of either planting fast-growing trees, or of removing trees. There is an enormous body of literature on this subject – it is not complicated, nor is it controversial. Trees perform the following hydrologic functions:

- Trees directly remove stormwater from the watershed through evapotranspiration. Trees remove enormous quantities of groundwater, substantially lowering the elevation of the water table. Also, tree roots are very effective promoters of infiltration pathways. Operating together, these provide substantial storage for stormwater in the unsaturated zone, and active infiltration pathways for surface water to get to that storage. When trees

are removed, the groundwater table in the immediate area immediately rises, a process known as “watering-up”. This allows the unsaturated zone to become saturated during a storm much more quickly. It is well-established in logging areas that removal of trees immediately increases the frequency and intensity of surface water flooding.

- Watering up also has the effect of killing whatever trees have been left in place. Even if a tree removal project leaves some trees uncut, they will quickly die due to the modification of their hydrologic setting. This can be clearly seen at past projects. Advocates of stream restoration like to proclaim that these projects do not “clearcut” forests. This depends on the definition of “clearcut”. At past projects I have visited, a small number of mature trees were left uncut by the developer. In both cases, all of those leftover trees died anyway, and still stand there today as ghostly reminders of the mature forest that once thrived in both places.
- Trees also directly remove stormwater from the watershed before it reaches the ground, through evaporation. When it rains, the trunk, branches, and leaves get wet – a process known as canopy interception. Following the rain, much of this water evaporates without reaching the ground. This is a large amount of water. When trees are removed, this water that would have evaporated over time instead reaches the ground immediately, during the most intense part of the storm, and becomes stormwater.
- Much of the water from the branches and leaves that does drip and reach the ground does so in the hours or days following a storm. Although the water enters the watershed, it does so slowly, over a period of hours or days, and thus does not add to the immediacy of a flood during a storm. Removal of trees eliminates this attenuation effect of trees, thus adding to stormwater volumes at the very time that additional water is most destructive.
- The presence of tree trunks and fallen tree trunks, branches, and leaves all add to the roughness of the forest floor. This roughness is another strong attenuation effect on stormwater. It slows the stormwater velocity, reducing its erosive effect. Removal of trees allows stormwater to flow freely, with nothing to hinder its velocity and erosive powers.
- The root structures of trees, as well as fallen trunks and branches, serve to stabilize soils in place and protect them from erosion. Removal of trees removes this stabilizing effect, exposing soils to increased erosion and downstream transport.
- Trees directly reduce nutrient concentrations, such as nitrogen, in groundwater and, by extension, in nearby surface water bodies that receive discharged groundwater.

In all cases, there are some important observations:

1) The effect is highest at the tree, and diminishes with distance from the tree. Therefore, removal of trees within close proximity of surface water bodies has a substantial ability to influence the amount of stormwater that enters the stream.

2) The effect is immediate when a tree is cut down. The hydrologic functions of the tree cease immediately, the groundwater level begins to rise immediately, and adverse effects on nearby streams can be seen to happen within a few weeks.

3) The effect is permanent, unless trees of similar size and evapotranspiration capacity take their place. Where mature trees are removed and attempts to re-establish the forest are made, the hydrologic system can take 10 to 20 years to recover.

Almost all of the discussion regarding stormwater management issues in urban watersheds focuses on the conversion of permeable land surface to impermeable, thus eliminating infiltration and increasing the volume and velocity of stormwater. This is true, but it is the highly visible part that is easy to understand and explain to people. Evaporation and

evapotranspiration are invisible. You cannot stand by a tree and watch as it physically removes water from the watershed, as the groundwater table is lowered, and as the water is evaporated into the atmosphere. Nevertheless, this happens, in enormous quantities. By some estimates I have looked at, forests stands in Maryland evaporate more than 50% of the precipitation that falls on them (Sanford, Ward E., and Selnick, David L., 2012). When these trees are removed, this water raises groundwater levels, reducing water storage capacity during a storm. This excess water then becomes increased runoff stormwater during rainstorms.

The simple act of removing trees to try to "restore" a stream actually increases the runoff, which is the cause of the degraded stream in the first place! Yet many of the "experts" who testified in favor of H.B. 1165 did not seem to understand why the CESR report showed such negative results, and thought that the solution is to cut down even more trees, at an accelerated pace.

This approach can only be favored by an industry that has a financial interest in cutting down as many trees as possible. Of the proposed legislation currently being considered regarding stream restoration practices, only H.B. 1284 makes an attempt to require the practitioners to be more transparent to the community regarding their plans for tree removals, and to minimize tree removals. I urge that the bills that make broad, non-specific references to minimizing tree removal, without having any specific, concrete requirements, be rejected.

Need to Require Pre- and Post-Construction Monitoring

Unfortunately, the question of how ecology, hydrology, water quality, streambank erosion, and other functions of watersheds react to human manipulation is complicated by the length of time that it takes these systems to react, and the multiple external factors, some natural and some human-caused, that that may influence these reactions. We would like to have immediate answers to inform our future efforts, but that is not possible. So, instead of ensuring that science-based, quantifiable and measureable techniques are used, and are given the time to generate meaningful answers, the "stream restoration" industry has responded by managing to avoid the need to do any monitoring whatsoever.

As a 30+ year experienced environmental consulting contractor, this fact had me completely stunned. EVERY environmental project I have ever worked has established measureable and quantifiable goals. It was only after a year of studying these projects, in detail, that I realized how little actual field monitoring and data collection is required.

In reviewing emails regarding a recently completed project in Columbia, I found an exchange regarding this issue. In that exchange, MDE acknowledged that the ability of the agency to reach conclusions regarding the success or failure of multiple projects was hampered by the "unfortunate" choice to not collect any background data, and the fact that it takes years for biological systems to respond to the projects.

I fully agree with the statements in that email. While I agree that it is "unfortunate" that these projects are not subjected to pre-construction monitoring, so that a science- and data-based evaluation of the project could be developed, this is how USACE and MDE have chosen to operate the program. This unfortunate circumstance could, and should, be avoided in the future by requiring both pre- and post-construction monitoring on the projects, including field measurements of the stream stability, water quality, and ecological parameters that are supposed to be improved by the project. It makes no sense that your agencies would sanction the destruction of mature forests in residential areas based on a promise of improvements, without actually requiring that those improvements be demonstrated through pre- and post-construction data collection.

If the “stream restoration” industry is so convinced of the benefits of their projects, then they should have no problem performing site-specific monitoring, both pre- and post-construction, as would be required by Section 5-203.2(B)(2) of H.B. 1284. However, their actions are the exact opposite, and it is not hard to understand why. These practitioners resist project-specific monitoring because it costs money, and because it may provide results that they do not like. It is much easier, and more lucrative, to simply cut down the trees, push the dirt around, and declare success without any actual data to demonstrate this. Meanwhile, the individuals testifying in favor of H.B. 1165 expressed surprise and disappointment at the negative results of the CESR report. Given that there is no actual data for the individual projects, it should not be surprising that the agglomeration of projects shows no improvements.

Public Engagement

In reviewing the testimony regarding House Bill 1165 last week, I noted that there was general agreement among the legislators, commenters, and stream restoration companies that existing public engagement practices have been insufficient, and need to be addressed in regulation. Recognizing that the practice of “stream restoration” has failed in this area is the first step toward correcting it. Therefore, I was happy to see that most of the proponents of that bill agreed that “stream restorations” have failed on this issue in the past, and they support legislation that would codify public engagement requirements.

Now that the need for legislation that requires public engagement activities appears to have universal support, including from the stream restoration companies, the question is: what level of public engagement, and what specific requirements, must be mandated to make the public engagement activities meaningful?

Unfortunately, the language of H.B. 1165 is far too general to correct the failures of the public engagement activities that I have seen. A simple statement that “we must notify the community and hold some meetings” is meaningless without specifying exactly who must be notified, how they must be notified, and that the information provided to them is accurate enough for community members to understand the impact that the project will have.

I not only have more than 30 years of experience in managing public engagement programs for federal NEPA projects, but have also recently experienced, as an adjacent property owner, how the stream restoration industry implements these programs. For the recently proposed Elkhorn Branch project adjacent to my property, the process played out as follows:

1) There was literally no direct contact with me, or my neighbors, as part of the Columbia Association’s approval of the 130-acre, six mile-long easement. A presentation was made to the Village Board, at a meeting that is commonly attended by fewer than five residents, out of a community of more than 10,000. The stream restoration contractor’s position was that the onus was on the 10,000 residents to attend bi-weekly Village meetings, or on the Village to individually notify its 10,000 residents. In my federal NEPA experience, the onus is always squarely on the contractor who will be making profits by implementing the project.
2) There was no requirement for an official MDE or USACE public notification or comment opportunity. It was only after a neighbor made strenuous efforts and complaints that the agencies agreed to do this.
3) The notice of public comment period was sent to directly adjacent owners of single family homes. No notices were sent to hundreds of other single family homeowners who live within sight of, and walking distance of, the area which would be subjected to deforestation. For the seven multi-family apartment, condo, and townhouse communities

that are directly adjacent, a single notice was sent to the management company. In none of these cases did the management company forward the notices to the individual unit owners, many of whom live within less than 100 feet of the project area.

4) Despite there being a requirement in the checklist for Nationwide Permit 27 (NWP-27) to disclose the area and extent of tree clearing, the public notices for the project did not clearly provide this information. Instead, they presented the “Limits of Disturbance” (LOD). In engineering and construction parlance, LOD generally means “removal of all vegetation and grading of soil”. However, this definition is not generally known among residents without training in engineering or construction, and I know, from speaking about it with neighbors, that none of them understood that it indicated removal of all trees and vegetation. One of the requirements of the federal National Environmental Policy Act is that project documentation must be written in non-technical laymen’s terms that are readily understandable to the general population. The presentation of the LOD, without defining what that term means with respect to tree removal, was a clear attempt to avoid public opposition by using terminology that was not familiar to the general public.
5) Confusing the situation even more was the actions of the owner of the project, the Columbia Association (CA). At the end of the public comment period, the Staff encouraged its Board to dismiss all comments from the public regarding tree removal because the extent of tree removal had not yet been determined. This is a direct admission that the permit application and public notice had failed to satisfy the checklist requirement to disclose this information to the adjacent property owners and residents.
6) The public notice also failed to accurately describe the duration of the impact of the project. It described the adverse impacts as “temporary”, even though any impacts associated with de-forestation are clearly long-term or permanent. The U.S. Army Corps of Engineers – Baltimore District, in its recent Environment Impact Statement for the proposed Bureau of Engraving and Printing project in Beltsville, define the duration of the impacts of vegetation removal as “long-term”. Meanwhile, even a successful stream restoration project, if it involves extensive tree removal, will take years or decades to recover. In Columbia, the Longfellow project was recently required to re-plant 700 trees, three years after construction, because the first attempt at re-forestation had failed. At The Glade in Reston, Virginia, there is no evidence of a return of a mature forest 14 years after construction. Yet I, and my neighbors, chose not to review project documents, attend public meetings, or provide comments, because the public notices encouraged us to believe that the only adverse impacts were associated with construction, and failed to acknowledge that longer-term impacts would also occur. Again, the reference to all impacts as “temporary” was a transparent attempt to avoid any public opposition.

In more than 30 years of managing the public engagement components of large-scale development projects under NEPA, I have witnessed a major evolution in the attitudes of both the agencies, and the private developers, toward these public engagement processes. In the early years of these programs, the focus was on “notification”, and any actual engagement or cooperation by the community was viewed only as a delay in approval of the project. Now, after more than 30 years, I have found that the competent and ethical agencies and contractors actually want to notify and involve as many people as possible, as early as possible. In contrast, those who are seeking to make a quick buck and then leave town prefer to try to slip their project past the public with as little notification and engagement as possible.

It is quite clear that many stream restoration practitioners feel that they have a vested interest in minimizing public knowledge of their project, and in trivializing the extent and duration of the destruction that they will cause. This is why requirements for public engagement activities must

be specifically defined in regulation. While there are some elements of these requirements provided in the other proposed stream restoration bills, the language is not nearly specific enough to ensure that the practitioners will be fully transparent with the affected community.

For instance, H.B. 1165 specifies that two public meetings must occur, and that adjacent property owners be notified. Based on my recent experience, I would fully expect the practitioners to interpret this as allowing two meetings at the same location, on the same day, end-to-end. This would obviously avoid the spirit of the legislation, which is to allow the public to comment on the general concept of the project in its early stages, as well as how the actual, final design would impact them and their property. Similarly, the vague reference to “adjacent property owners” is not sufficient to notify, and involve, the full range of residents and property owners who are adversely affected by these projects. These, and other requirements that would match federal NEPA standards for public engagement, are accomplished in H.B. 1284.

Thank you for considering these comments, and providing a favorable report on H.B. 1284.

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